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THE CHANGING ACADEMIC PROFESSION IN INTERNATIONAL COMPARATIVE AND QUANTITATIVE PERSPECTIVES

Report of the International Conference on
the Changing Academic Profession Project, 2008

Organized by: Research Institute for Higher Education, Hiroshima University and
Research Institute for Higher Education, Hijiya University

RIHE Research Institute for Higher Education
HIROSHIMA UNIVERSITY

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Research Institute for Higher Education

HIROSHIMA UNIVERSITY

**The Changing Academic Profession in International
Comparative and Quantitative Perspectives**

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CONTENTS

Foreword

| | |
|-------------------------|---|
| Shinichi Yamamoto | i |
|-------------------------|---|

Keynote Speeches

Keynote Speech 1

International Implications of the Changing Academic Profession in Japan

| | |
|---------------------|---|
| Akira Arimoto | 1 |
|---------------------|---|

Keynote Speech 2

The Context for the Changing Academic Profession: a survey of international indicators

| | |
|---------------------------|----|
| William K. Cummings | 33 |
|---------------------------|----|

Country Reports

North America

The Changing Academic Profession in Canada: exploring themes of relevance, internationalization, and management

| | |
|--------------------------|----|
| Amy Scott Metcalfe | 57 |
|--------------------------|----|

The Changing Academic Profession in the United States: 2007

| | |
|---|----|
| Martin Finkelstein and William Cummings | 75 |
|---|----|

European Countries

The Academic Profession in England: still stratified after all these years?

| | |
|---------------------|----|
| William Locke | 89 |
|---------------------|----|

Changes in the Finnish Academic Profession Reflect Reforms in Higher Education

| | |
|--|-----|
| Timo Aarrevaara and Seppo Hölttä | 117 |
|--|-----|

Academic Staff in Germany: *per aspera ad astra?*

| | |
|-----------------------|-----|
| Ulrich Teichler | 131 |
|-----------------------|-----|

The Changing Academic Profession in Italy: accounts from the past, first insights from the present

| | |
|----------------------|-----|
| Michele Rostan | 153 |
|----------------------|-----|

Asia-Pacific Region

| | |
|--|-----|
| The Australian Academic Profession: a first overview | |
| Hamish Coates, Leo Goedegebuure, Jeannet Van Der Lee and Lynn Meek | 179 |
| Governance and Decision-Making Related to Academic Activities: the case of higher educational institutions in Malaysia | |
| Muhamad Jantan and Morshidi Sirat | 203 |
| A Preliminary Review of the Hong Kong CAP Data | |
| Gerard A. Postiglione and Hei Hang Hayes Tang | 227 |
| Progress of the Academic Profession in Mainland China | |
| Hong Shen | 251 |
| Analyses of the Educational Backgrounds and Career Paths of Faculty in Higher Education Institutions in Beijing Municipality, China | |
| Yan Fengqiao and Chen Yuan | 265 |
| The Changing Academic Profession in an Era of University Reform in Japan | |
| Tsukasa Daizen and Atsunori Yamanoi | 293 |

Latin America

| | |
|---|-----|
| Brazilian Academic Profession: some recent trends | |
| Elizabeth Balbachevsky, Simon Schwartzman, Nathalia Novaes Alves, Dante Filipe Felgueiras dos Santos and Tiago Silva Birkholz Duarte | 327 |
| Mexican Academics at the Turn of the Twenty-First Century: who are they and how do they perceive their work, institutions and public policies (a preliminary analysis) | |
| Jesús Francisco Galaz-Fontes, Laura Elena Padilla-González, Manuel Gil-Antón, Juan José Sevilla-García, José Luis Arcos-Vega, Jorge Martínez-Stack, Sergio Martínez-Romo, Gabriel Arturo Sánchez-de-Aparicio-y-Benítez, Leonardo Jiménez-Loza and María Elena Barrera-Bustillos | 345 |
| The Academic Profession in Argentina: characteristics and trends in the context of a mass higher education system | |
| Monica Marquina and Norberto Fernandez Lamarra | 363 |

Africa

| | |
|--|-----|
| The Academic Profession in South Africa in Times of Change: portrait from the preliminary results of the Changing Academic Profession (CAP) Research Project | |
| Charste C. Wolluter, Philip Higgs, Leonie G. Higgs and Isaac M. Ntshoe | 389 |

Conclusion

| | |
|--|-----|
| Preliminary Findings and Discussions about the Characteristics of the Changing Academic Profession in Fifteen Countries and Regions: an international, comparative and quantitative perspective Futao Huang | 401 |
|--|-----|

Appendices

| | |
|-------------------------------|-----|
| 1. CAP Questionnaire | 405 |
| 2. Conference Program | 421 |
| 3. List of Participants | 427 |

Brazilian Academic Profession: some recent trends

Elizabeth Balbachevsky^{*}, Simon Schwartzman^{**}, Nathalia Novaes Alves^{***}, Dante Filipe Felgueiras dos Santos^{****} and Tiago Silva Birkholz Duarte^{*****}

The 2006 census of Brazilian Higher Education shows a highly disperse and diversified system. There are 2,270 institutions, of which only 178 are considered Universities.¹ The public sector is small, with only 10.9% of all institutions, some under the Federal government (4.6%), others under state (provincial) governments (3.6%), and a few under local municipalities (2.6%). Federal and state institutions tend to be larger and better institutionalized than the private ones: they represent 51.7% of all Brazilian universities and account for most of the country's graduate education (81.3% of the enrollment at this level). Municipal institutions, however, are similar to the private ones at the lower end: they are small colleges, and the teaching staff are not very well qualified and do not have contracts for full-time employment.

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¹ To be recognized as universities, higher education institutions in Brazil need to fulfill some requirements that includes at least a third of their academic staff with at least a master's degree and full time contracts, besides the provision of some graduate education degree programs, and teaching in the health, technical and social sciences. There is no legal difference in the degrees provided by university and non-university institutions, but universities have more autonomy to open new course programs and to decide the number of vacancies they offer each year.

The private sector is huge: it includes 2,022 institutions and answers for 74.1% of all undergraduate enrollments. Most private institutions – 95.7% – are small, family-owned colleges scattered all throughout the country, and enroll 43% of all undergraduate students in the country. The remaining 4.3% are large institutions, enrolling 31.1% of the undergraduate students. Most private sector institutions (78.3%) are for-profit, and, as such have no tax benefits, and are not required to provide institutional scholarships or philanthropic services. The remaining 21.7% are formally classified as philanthropic institutions. Most private universities are old philanthropic institutions. Nevertheless, in the last decade gigantic universities have grown also in the for-profit sub-sector.

Table 1 provides some relevant figures for the Brazilian higher education system for 2006. There were 4.7 million undergraduate and 132,500 graduate students in masters' and doctorate programs. There were 316,900 teaching posts, a third of which were full-time.² In federal institutions, 83.4% of the academic staff have full-time contracts; in state institutions, 73.1%. The pattern for university and non-university institutions is the same in these sectors. In municipal institutions, however, only 19% of the academic positions are full-time.

Only 16% of the academic posts in private institutions are full-time, with differences among for-profit and not for-profit, university and non-university institutions. The figures are 11% in for-profit non-universities; 29.7% in for-profit universities; 12.7% in philanthropic non-universities; and 23.2% in philanthropic universities.

Table 1 also shows that 22.3% of all academic positions in Brazilian higher education are filled by professionals holding doctorates. Academics with such profiles are to be found mostly in the public sector, and in federal and state owned universities within it. In fact, while the public sector offers only 33.7% of all academic positions, 63.4% of all Brazilian academics holding a doctorate work in a public institution. In the private sector it is the opposite: it contributes 66.2% of all academic posts, but only 35.8% of the academics holding a PhD.

² In the 2003 survey, 90% of the academics that declared holding full-time contracts also declared working with only one HE institution. This figure has been confirmed by the 2007 survey. Academics with full-time contracts also declare that the income derived by this academic position represents, on average, 80% of their total monthly income. In the public sector, a full-time contract requires a small teaching load of between 12 to 16 hours *per week*. In the private sector, full-time contracts usually require a teaching load of 20 to 30 hours *per week*.

Table 1. Brazilian Higher Education System: major figures, 2006

| <i>Owner-ship</i> | <i>Type</i> | <i>Number of Institutions</i> | <i>Undergraduate Enrollments</i> | <i>Graduate Enrollments</i> | <i>Faculty employed</i> | | |
|-------------------|--------------|-------------------------------|----------------------------------|-----------------------------|-------------------------|-------------|------------------|
| | | | | | <i>Total</i> | <i>PhD.</i> | <i>Full-time</i> |
| Federal | Universities | 53 | 556,231 | NA | 52,881 | 26,243 | 44,077 |
| | Nonuniv. | 52 | 33,590 | NA | 5,197 | 879 | 4,503 |
| | Total | 105 | 589,821 | 66,602 | 58,078 | 27,122 | 48,580 |
| State | Universities | 34 | 436,662 | NA | 37,482 | 15,951 | 28,348 |
| | Non Univ. | 49 | 45,094 | NA | 3,525 | 476 | 1,665 |
| | Total | 83 | 481,756 | 40,417 | 41,007 | 16,427 | 30,013 |
| Local | Universities | 5 | 60,370 | NA | 3,841 | 699 | 1,073 |
| | Nonuniv. | 55 | 77,357 | NA | 4,073 | 517 | 428 |
| | Total | 60 | 137,727 | 682 | 7,914 | 1,216 | 1,501 |
| All | Universities | 92 | 1,053,263 | NA | 94,204 | 42,893 | 73,498 |
| Public | Non Univ. | 156 | 156,041 | NA | 12,795 | 1,872 | 6,596 |
| | Total | 248 | 1,209,304 | 107,701 | 106,999 | 44,765 | 80,094 |
| For | Universities | 24 | 437,165 | NA | 17,792 | 2,691 | 5,358 |
| Profit | Non Univ. | 1,559 | 1,487,001 | NA | 100,947 | 8,442 | 11,156 |
| | Total | 1,583 | 1,924,166 | NA | 118,739 | 11,133 | 16,214 |
| Philan- tropic | Universities | 62 | 1,019,968 | NA | 56,485 | 10,877 | 13,136 |
| | Non Univ. | 377 | 523,208 | NA | 34,659 | 3,904 | 4,404 |
| | Total | 439 | 1,543,176 | NA | 91,144 | 14,718 | 17,540 |
| All | Universities | 86 | 1,457,133 | NA | 74,277 | 13,568 | 18,494 |
| Private | Non Univ. | 1,936 | 2,010,209 | NA | 13,5606 | 12,283 | 15,260 |
| | Total | 2,022 | 3,467,342 | 24,780 | 209,883 | 25,851 | 33,754 |
| Total | Universities | 178 | 2,510,396 | NA | 168,481 | 56,461 | 91,992 |
| | Non Univ. | 2092 | 2,166,250 | NA | 148,401 | 14,155 | 21,856 |
| | Total | 2,270 | 4,676,646 | 132,481 | 316,882 | 70,616 | 113,848 |

Sources: For the number of institutions, undergraduate enrollments and faculty, Brazilian Ministry of Education, Higher Education Census of 2006. For graduate education, Ministry of Education, CAPES Foundation -<http://www.capes.gov.br/sobre/estatisticas/>

Notes: Graduate education includes students enrolled in Masters' of Science, Professional Masters' and Doctorate programs.

NA: Not available

Intra-sector institutional differences

The figures presented above are eloquent in showing the striking differences among institutions that coexist in Brazilian higher education. In fact, Brazilian higher education is not only diversified but also sharply stratified, both between

and within each sector. In the public sector, the major line of differentiation and hierarchy is the one created by the degree of institutionalization of graduate education. In the late 1960s, when the Brazilian government started to support graduate education,³ only a few public institutions were well positioned to take advantage of the existing incentives. These institutions created a large number of graduate programs, and hired academics with PhDs to staff them. The influx of these scholars created a dynamic environment inside these institutions. With a great number of PhD holders, these institutions were also able to capture the investments the Brazilian government was mobilizing for science and technology in the 1970s. Nowadays, these institutions could be called the “Research public universities stratum”: they provide a good working environment, which, in turn, allows them to secure the better-qualified academics and attract public financial support for research. A major feature of these institutions is the great proportion of PhD holders among their faculty. In some of them more than 90% of all academic staff hold a PhD. These institutions also are distinguished by the efforts committed to graduate education: in none of them less than 30% of their students are enrolled in graduate programs, and in some this proportion is above 50%. These institutions award most of the PhD degrees granted in the country and in them the academic staff tend to be very influential in matters of institutional governance.

The other public institutions can be placed in a separate category. Most of them hold university status but lack conditions for high-level academic work. They have not been able to establish a strong graduate layer and thus have difficulties in attracting and retaining holders of doctorates among their staff. Bureaucracy and teacher’s unions have greater power than the academic staff, and central administration also tends to have more scope for initiatives. Graduate education is a smaller enterprise in these institutions and tends to be confined to the masters’ level. Nonetheless, these institutions play a relevant role not only in undergraduate education, but also as a regional source of skills and knowledge. As such, they may be called “regional public institutions”.

In the private sector there is also a small segment of institutions committed to graduate education. In the late 1960s some Catholic universities, and more particularly the Pontifical Catholic University of Rio de Janeiro, also took advantage of the government initiatives to support graduate education. Thus they committed efforts to build up a graduate layer, and, with the support of the Federal government, evolved in a pattern very much similar to the one found in

³ For an overview of Brazilian graduate education see Balachevsky, 2004.

the federal sector, with generous full-time contracts and support for academic research and graduate education. In the 1990s, when public subsidies dried up, some of these institutions evolved an active entrepreneurial orientation, establishing strong links with outside users and clients for their research and development capabilities. They built up a strong periphery of institutes linking the competences at the core of the university's Departments with users outside the academic world.⁴ In the last decade some other private institutions (confessional and non-confessional ones) also experienced some movement toward a more entrepreneurial orientation – that is, to an awareness and willingness for actively exploring alternative fund-raising activities, including services, graduate professional education and life-long learning programs (as opposed to a strategy of relying solely on funds raised by tuition fees paid by undergraduate students). In common, all these institutions have room for engaging a larger proportion of PhD holders in their staff. For these institutions, academic credentials are regarded as a source of differentiation, both in the undergraduate market by attracting students from wealthier families willing to pay for good educational standards, and in the services market by offering well-regarded professional training programs and job-oriented graduate education, as well as consultancy and advisory activities. These orientations and features set apart a small group of private institutions that could be called “Elite private institutions”. They are small in number, but are well known and respected in the Brazilian higher education's landscape. From the point of view of upper-middle class families, they represent the only real alternative to the educational services provided by the public sector.

In the lowest stratum is congregated the great majority of Brazilian higher education institutions. They are mostly private institutions, or owned by small municipalities. Most are small colleges or isolated professional schools, but the group includes some large, teaching-only institutions that have managed to be accredited at some point as universities and can have 60,000 or more students. In common, they all are confined to a kind of commodity-like market of mass undergraduate education, where the price charged for education is the most relevant differential. Lower tuition fees are the goal, and saving in expenses in providing the undergraduate programs is the best strategy. They may be called “mass-oriented private institutions”.

For these institutions, full-time (or even part-time) contracts and graduate

⁴ See the case studies of the Catholic University Computer Science sector and the Getúlio Vargas Foundation Economics centers in Schwartzman *et al.* (forthcoming).

faculty are luxuries they hesitate to incur. When a choice is posed, they usually opt for hiring non-graduate trained instructors on contracts based on *per* hour payments. When they are forced by governmental regulations to hire graduate academics, they prefer masters' degree holders, as they have no room for a strategic use of the competences and prestige associated with the PhD degree.

Some of them, mostly universities, do display some research related indicators, since "research – or indicators of research" is a bureaucratic demand from government to all officially recognized universities. Thus all private universities in Brazil have a few research groups (or graduate, masters' or doctoral, programs), if only for the sake of producing the indicators demanded by the government. But the real difference between these institutions and the elite private stratum is to be found in the strategic place occupied by these research-related activities. In the "mass-oriented institutions", research groups tend to be few, small, chronically undernourished and with few connections to the institution's real life. They are not supposed to grow and to occupy a place of their own inside the institution. They exist only for the sake of the indicators they produce. In contrast, at "elite private institutions" research, consultancy and related activities play strategic roles, and the full-time academic staff are stimulated to develop projects and initiatives of different kinds.

Institutions at this lower stratum are not organized in academic departments and have small room for initiatives from the faculty. They are vertically organized, and the smallest organizational unit is the bachelor course program. Each program is supervised by a coordinator, usually a senior teacher, with long years at the institution. Their authority derives from the trust of the institution's owner, rather than academic reputation or leadership.

The 2007 survey on the academic profession in Brazil

The sample design used for the 2007 survey on the academic profession in Brazil, as part of the International Project on the Changing Academic Profession (CAP Project) incorporates the categories just sketched. The realm of Brazilian higher education institutions was classified in the four strata identified above: "research public universities", "regional public institutions", "elite private institutions" and "mass private institutions". The indicators used for classifying each institution were the proportion of PhD holders in an institution's faculty and the proportion of faculty employed on full-time contracts. Thus,

- **Research Public Universities** are public institutions where one finds a high proportion of PhD holders (50% or more) among faculty and also a high proportion of academics with full-time contracts (70% or more). It happens that all institutions in this stratum are recognized as universities.
- **Regional Public Institutions** are public institutions that have a high proportion of academics with full-time contracts and medium or low proportions of PhD holders among faculty.
- **Elite Private Institutions** are private institutions with a high proportion of PhD holders among faculty and at least a significant proportion of academics with full-time contracts.
- **Mass Private Institutions** are private or local owned institutions⁵ with a low proportion of PhD holders among their faculty and a small number of full-time contracts.
- To these strata, we added a fifth, for scholars from **research institutes**, a small but relevant component of the Brazilian academic enterprise.

Across all the strata, institutions were sorted by size and the larger ones were weighted in order to avoid over-representation of small institutions in any one stratum. The institutional sample was randomly chosen inside each stratum. For each institution in our sample we had access to all academic staff in lists collected by the Brazilian Ministry of Education. From these lists we sampled 5,000 academics and for each of them, listed all e-mail addresses known, after consulting the institutions, the Brazilian Directory of Researchers (Plataforma Lattes), maintained by the Brazilian Council for Research (CNPq – Conselho Nacional de Pesquisa),⁶ of the Ministry of Science and Technology and other

⁵ Municipal higher education institutions are officially classified as public, but have no resemblance with other public institutions in Brazil. The most usual origin of such institutions is an agreement between local authorities and a private entrepreneur, where the municipality offers the buildings while the entrepreneur builds up the institution. As such, they do not have access to public funds or other forms of support, and their faculty do not have civil servant status; they are maintained by the tuition fees charged to the students. Through being small and not well-endowed in academic standards, they operate in the same mass oriented HE market as most of the institutions in the private sector.

⁶ The Plataforma Lattes is an on-line directory of researchers' *curricula vitae* organized by the Brazilian Ministry of Science and Technology. Maintaining up-to-date *c.v.* in this Directory is mandatory for any researchers applying for public support at any level for their projects. It is also mandatory for any academic working in graduate programs, both at public and private sector, since the advisors' *c.v.* constitute part of the evidence analyzed in the graduate program's evaluation process.

private Internet-based sources like Orkut and MSN services. In spite of all efforts, 298 names of faculty were dropped from our list due to problems in locating their e-mail addresses or out-dated information. The remaining 4,702 academics were contacted by e-mail on at least three different occasions and at least once by letter. All doubts expressed by the respondents were addressed by the team of researchers by e-mail. The fieldwork started in October and was finalized by the end of December, 2007. At this time, 1,200 academics had answered all the content of the questionnaire presented to them. A further 300 academics responded only partially to the questionnaire and were excluded from the sample. The rate of response is 25.5%, a good rate by international standards. Much more important, the distribution of responses by stratum provided a well balanced sample, even if it slightly over-represents the public sector, as can be seen in Table 2.

Table 2. Brazilian Academic Profession 2007: sample and field research results by stratum

| Stratum | Planned sample | | Achieved sample | |
|------------------------------|----------------|------------|-----------------|------------|
| | Total | Percentage | Total | Percentage |
| Research Institutes | 50 | 5% | 49 | 4.1% |
| Research Public Universities | 150 | 15% | 197 | 16.4% |
| Regional Public Institutions | 200 | 20% | 296 | 24.7% |
| Elite Private Institutions | 150 | 15% | 171 | 14.3% |
| Mass Private Institutions | 450 | 45% | 487 | 40.6% |

The changing academic profession in Brazil: some preliminary findings

The data collected in 2007 conformed to the pattern of data from two previous researches on the Brazilian academic profession: a 1992 sample carried out under the Carnegie initiative, and a 2003 sample, supported by the Ford Foundation. All samples follow a similar design: the 1992 and 2003 surveys follow the guidelines proposed by the Carnegie foundation in 1989. They identify three strata: research universities, regional institutions and mass-oriented institutions. When the previous surveys were conducted, the number of elite private institutions was so small that they were included with public research universities in the research universities strata. The 2007 survey incorporated sector information in the sample design, since from late 1980s to now the number of private institutions displaying elite orientation has grown and

become more prominent in Brazilian higher education.

The academic profession in Brazil: a demographic profile

In this section we explore some relevant information on the main variables regarding the demographic profile of the Brazilian academic profession. Table 3 provides information about the different patterns of appointments according to types of institution regarding gender.

Table 3. Gender by institutional context, Brazil, 2007

| | | Institutional context | | | | | Total |
|--------------|--------|------------------------------------|------------------------------------|----------------------------------|---------------------------------|------------------------|---------|
| | | Research Public Universities | Regional Public Institutions | Elite Private Institutions | Mass Private Institutions | Research Institutes | |
| Gender | Male | 58.9% | 49.3% | 61.4% | 50.0% | 73.5% | 53.9% |
| | female | 41.1% | 50.7% | 38.6% | 50.0% | 26.5% | 46.1% |
| Total (100%) | | (197) | (296) | (171) | (484) | (49) | (1,197) |

Source: CAP Survey: Brazil

Notes: Chi-Square: 18.4, df: 4 Asymp. Sig. (2-sided): 0.001

Gender participation in the academic profession in Brazil is reasonably well balanced. In our sample, 54% of the respondents are men and 46% are women. Nevertheless, the proportion of men among faculty is higher in research universities (58.9%), elite private institutions (61.4%) and (73.5%) research institutes. Gender affects career patterns in elite private institutions and in research institutes. In these places, being a man significantly increases the probability of reaching higher ranks in a career (see Table 4, below). The career patterns in both private and public institutions are similar. In public institutions, a career starts as a teaching assistant, a position that only requires a bachelor's degree. The subsequent position, assistant professor, requires a master's degree, and with a doctorate an academic is automatically promoted to associate professor or *adjunto*. The highest rank is a full professorship. Access to a full professorship is usually subject to some negotiations inside the institution, as it is the only rank with a restricted number of positions. Careers in the private sector are similar, except that promotion is more difficult than in the public sector. Since 1990, the first two ranks, teaching assistant and assistant professor, have tended to collapse into one in many institutions (For an overview of the career patterns among Brazilian higher education see Balbachevsky, 2008).

Table 4. Brazil: rank, gender and career by types of institutions

| Institutional context | Gender | Mean | Number | Std. deviation |
|------------------------------|--------|------|--------|----------------|
| Research Public Universities | Male | 1.86 | 115 | 0.66 |
| | Female | 1.84 | 81 | 0.56 |
| | Total | 1.85 | 196 | 0.62 |
| Regional Public Institutions | Male | 1.84 | 146 | 0.75 |
| | Female | 1.83 | 149 | 0.83 |
| | Total | 1.84 | 295 | 0.79 |
| Elite Private Institutions | Male | 1.53 | 105 | 0.99 |
| | Female | 1.42 | 66 | 1.02 |
| | Total | 1.49 | 171 | 1.00 |
| Mass Private Institutions | Male | 1.89 | 240 | 1.06 |
| | Female | 1.90 | 241 | 1.03 |
| | Total | 1.89 | 481 | 1.04 |
| Research Institutes | Male | 2.42 | 36 | 0.55 |
| | Female | 1.77 | 13 | 0.93 |
| | Total | 2.24 | 49 | 0.72 |
| Total | Male | 1.85 | 642 | 0.91 |
| | Female | 1.81 | 550 | 0.93 |
| | Total | 1.83 | 1,192 | 0.92 |

Source: CAP Brazil, 2007

Notes: Rank scale: 0 = not in the career path; 1= teaching assistant, assistant, assistant professor; 2 = associate professor, *adjunto*; 3 = full professor.

On average, Brazilian academics are 45 years old (standard deviation, 9.5 years). This figure has not changed significantly from 1992 to the present. In the Carnegie survey of 1992, the average was 43.1 years (standard deviation, 9.1 years). Academics employed in more competitive environments are slightly older. Thus, the average ages in research universities, elite private institutions and research Institutes are 47 years, while those employed in regional institutions and the mass private sector are 42. Again, this is a tendency previously found in the 1992 survey.

Another relevant trait to be found among academics in Brazil is the impressive upward movement most of them have experienced in their lives. As can be seen in Table 5 most Brazilian academics are the first generation in their families to reach academic education. In fact, only 35.2% of our respondents have fathers with some higher education. For another 21.2%, the father's educational level reported is secondary school while a further 34.2% reported only primary education. Finally, 9.3% of our respondents are sons and

daughters from families whose fathers had no formal education at all. Again, the distribution of these responses is significantly influenced by the type of institution where the scholar works. In public regional institutions, the proportion of respondents reporting fathers with only primary education was significantly higher (41.4%) than that of those with fathers who had higher education (26.1%). In mass private institutions, the proportion of those reporting fathers with no formal education amounted to 12.3%. On the other hand, elite private institutions and research institutes show a more selective pattern of recruitment: in both types of institutions, the proportions of respondents from families whose fathers attended higher education increased significantly: to 53.2% among academics from elite private institutions and to 54.2% among academics from research institutes. At the same time, in both contexts, reports of academics' fathers with less than secondary education decreased.

Table 5. Father's highest educational level by institutional context

| | | Institutional context | | | | | Total |
|--|--------------------------------|------------------------------------|------------------------------------|----------------------------------|---------------------------------|------------------------|---------|
| | | Research Public Universities | Regional Public Institutions | Elite Private Institutions | Mass Private Institutions | Research Institutes | |
| Father's highest edu- cational level | Without formal education | 6.6% -1.5 | 10.5% 0.8 | 2.3% -3.4 | 12.3% 2.9 | 8.3% -0.2 | 9.3% |
| | Primary education | 30.5% 1.2 | 41.4% 3.0 | 24.6% -2.9 | 37.4% 1.9 | 8.3% -3.9 | 34.2% |
| | Secondary education | 25.4% 1.6 | 22.0% 0.4 | 19.9% 0.5 | 18.7% -1.8 | 29.2% 1.4 | 21.2% |
| | Higher education | 37.6% 0.8 | 26.1% -3.8 | 53.2% 5.3 | 31.6% -2.2 | 54.2% 2.8 | 35.2% |
| Total (100%) | | (197) | (295) | (171) | (487) | (48) | (1,198) |

Source: CAP Brazil, 2007

Notes: Pearson Chi-Square: 70,76, 12 df, Asymp. Sig. (2-sided): 0.000.

The numbers below each cell are the standardized adjusted residuals.

In short, one can say that the elite and more competitive institutions tend to select their staff from among people coming from better-educated families. This is particularly true in the research institutes, where the academic staff tend to be older, predominantly male and from upper-middle class origins, in contrast to the younger, more balanced in gender and more modest social origins of the academic staff employed at other higher education institutions.

Working conditions and academic commitment

As was noted above, stable full-time contracts are the rule in the public sector – both in research oriented and public regional institutions. In elite private institutions, 50% of the staff reported full-time contracts, although they reported no stability, since this condition is not envisioned in the labor legislation regulating work contracts in the private sector. Faculty from mass private institutions have more precarious academic contracts, with 78% reporting only part-time or hourly paid, non-stable contracts. Among scholars from research universities, 82% reported that the university from which they responded was their only place of work. Among faculty employed by research institutes, 75% gave similar responses. Among academics from other public institutions, this figure drops to 69% and to 50% among academics from elite private institutions. Among academics employed in mass private institutions, only 34% reported having worked in just one institution.

Perhaps the most relevant change in the academic labor market in Brazil is the relative importance of the academic degree for access to an academic position. Brazil, like many other emerging countries around the world, has been plagued by shortcomings derived from a small pool of academically competent candidates from which to recruit faculty for its higher education institutions. The number of professionals holding doctoral degrees has been always low. Nevertheless, the last decade has witnessed relevant changes in this dimension.

Table 6. The academic cohort and graduate experience

Time in years elapsed between the first graduate degree and the first academic position. Negative values indicate that academic career began prior to achieving the first academic degree.

| Academic cohort | Mean | Number | Std. Deviation |
|-----------------|-------|--------|----------------|
| Before 1990s | -4.52 | 420 | 7.52 |
| 1990s | 0.25 | 452 | 5.26 |
| 2000s | 2.48 | 271 | 4.44 |
| Total | -0.98 | 1143 | 6.66 |

ANOVA Table

| | Sum of Squares | df | Mean Square | F | sig |
|----------------|----------------|------|-------------|---------|-------|
| Between groups | 9185.713 | 2 | 4592.857 | 126.188 | 0.000 |
| Within groups | 41492.649 | 1140 | 36.397 | | |
| Total | 50678.362 | 1142 | | | |

Source: CAP Brazil, 2007

These macro-tendencies have been captured by the successive surveys of the Brazilian academic profession. From 1992 until the present, the proportion of PhD holders increased in all types of institutions. In research-oriented and elite private institutions the proportion increased from 63% in 1992 to 90% in 2007; in regional public institutions, from 25% in 1992 to 65% in 2007; in mass private institutions, from 10% in 1992 to 32% in 2007. The data collected by the 2007 survey also show new dynamics inside the academic market in Brazil, as highlighted in table 6.

Splitting the 2007 sample into cohorts defined by the year when respondents started their first academic contracts, it is possible to see that those who started their careers before the 1990s achieved first graduate degrees,⁷ on average, 4 years after their first academic appointment. By the 1990s, scholars had achieved their first academic appointments in the same year they finished their first graduate degrees. Finally, academics entering the academic market in the 2000s achieved their first post graduate degrees on average 2.5 years before their first academic appointment.

Table 7. Highest academic degree by type of institution

| | | Institutional context | | | | | Total |
|-------------------------------|--------------------------|------------------------------------|------------------------------------|----------------------------------|---------------------------------|------------------------|---------|
| | | Research Public Universities | Regional Public Institutions | Elite Private Institutions | Mass Private Institutions | Research Institutes | |
| highest academic degree | PhD | 92.4% 11.0 | 63.5% 2.6 | 75.5% 4.4 | 29.6% -15.9 | 93.9% 5.3 | 9.3% |
| | Master's degree | 7.6% -8.1 | 29.7% -1.1 | 22.2% -3.1 | 50.1% 10.9 | 6.1% -4.0 | 34.2% |
| | No graduate degree | 0% -5.3 | 6.8% -2.5 | 5.3% -2.5 | 20.3% 9.0 | 0% -2.5 | 21.2% |
| Total (100%) | | (197) | (296) | (171) | (487) | (49) | (1,200) |

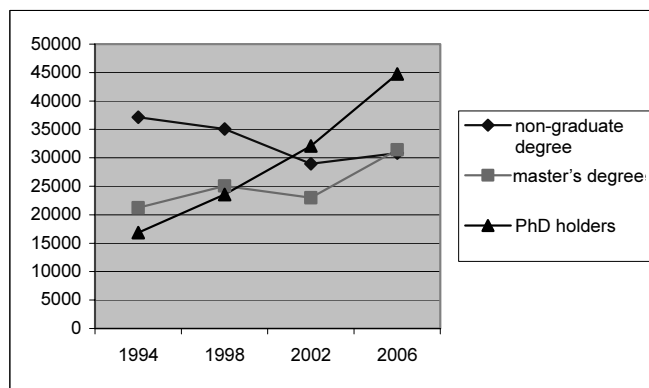
Source: CAP Brazil, 2007

Notes: Pearson Chi-Square: 307,7, d.f: 8, asymp. Sig. (2-sided): 0.000

The figures reported here show that the academic market in Brazil is

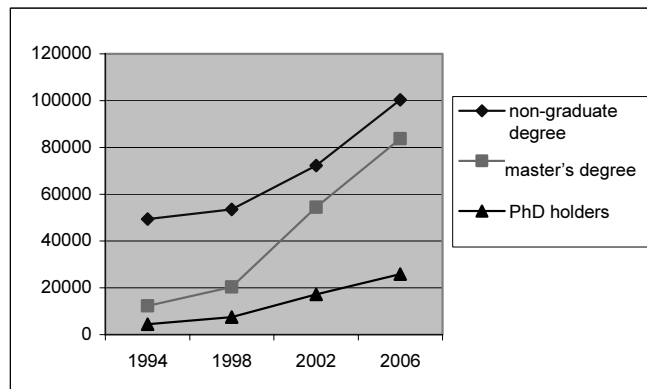
⁷ This figure takes into account all graduate degrees as well as masters' and doctoral degrees. This includes a peculiar graduate degree recognized by the Brazilian legislation, known as "specialization". These are short term training programs lasting for one year or 350 class-hours, aiming to provide specialized professional training in selected fields and/or skills.

increasingly competitive regarding academic credentials. This tendency is observed in all sectors and all kind of institutions. Nevertheless, the academic market in Brazil has not lost its main trait, which is segmentation. As Table 7 shows, different types of institutions tend to appoint academic staff with diverse academic profiles. While access to academic positions in research oriented institutions – research universities and research institutes – nowadays requires a doctorate, undergraduate oriented institutions, such as public regional institutions and mass private institutions are less selective, opening places for faculty with lower academic profiles.



Source: Ministry of Education, INEP, Census of Brazilian Higher Education, 1994-2006

Figure 1. Number of public sector academic positions by degree in Brazil



Source: Ministry of Education, INEP, Census of Brazilian Higher Education, 1994-2006

Figure 2. Number of private sector academic positions by degree in Brazil

These observations are corroborated by the tendencies observed in the aggregate official data collected annually by the Brazilian Ministry of Education by means of the Brazil's Census of Higher Education. Relevant data are shown in Figures 1 and 2.

Figure 1 shows the relevant and sharp increase in the participation of PhD holders in the public sector as a whole since the early 1990s. While the proportion of masters also increased, the increment, in this case, is much less evident. Figure 2, on the other hand, shows that in the private sector as a whole, the more evident increase is in the number of academics holding masters' degrees, even though positions filled by PhD holders also experienced a significant increase.

Together, these tendencies create sharp contrasts inside the academic market in Brazil. In our sample, 42% of the scholars who achieved PhD degrees were unable to secure stable, full-time contracts. Without full-time contracts, PhD degree holders also tend to have diminished opportunities for access to public funds for research. Thus, while reporting strong interest and commitment to research, a significant number of Brazilian scholars with PhD degrees also reported having no access to external research funding (40%). Considering that most of these scholars attended tuition-free doctorate programs offered by the best research oriented public universities, with most of them supported by publicly funded fellowships, the above figure suggests a significant waste of scarce public money.

In contrast, 30% of academics with only masters' or lower degrees reported stable, full-time contracts in public institutions. While lacking basic academic resources to reach a fully fledged role as independent scholars, these respondents have access to good job conditions provided by the standard terms of contract offered in the public sector. They have small teaching loads, stability, and wide room for self-regulated working time. It comes as no surprise that most of the academic staff with masters' degrees or lower (60%), employed with full-time contracts at public institutions in our sample, also declare that they have other jobs outside their main academic appointments.

International dimension of the Brazilian academic life

Brazilian higher education is a highly closed market: of all the scholars in our sample, 98% are Brazilian-born citizens. Brazilian doctors (85%) have achieved their PhDs in Brazil: 80% in public research universities, 88% in public regional institutions, and 90% in mass private institutions. This is reflected in

the low percentage of Brazilian academics that, in the last three years, have given classes in languages other than Portuguese (6%).

However, contacts and interaction with the external world increased very significantly in the last two decades. In 1992, only 9.2% of the Brazilian sample reported any collaboration with foreign colleagues. In 2007, this figure was 22%. As might be expected, the volume of international collaboration increased more in research-oriented environments, as can be seen in Table 8.

In fact, among scholars in research public universities, the proportion of scholars reporting collaboration with colleagues abroad is 37.6% and, at the research institutes, it reaches 65.3%; in mass private institutions this figure drops to only 9%.

Table 8. International collaboration by institutional context

| | | Institutional context | | | | | Total |
|---|-----|------------------------------|------------------------------|----------------------------|---------------------------|---------------------|---------|
| | | Research Public Universities | Regional Public Institutions | Elite Private Institutions | Mass Private Institutions | Research Institutes | |
| International research collaboration (last 3 years) | yes | 37.6% | 22.0% | 27.5% | 9.0% | 65.3% | 53.9% |
| | no | 5.8 | 0.1 | 1.9 | -8.9 | 7.5 | |
| | | 62.4% | 78.0% | 72.5% | 91.0% | 34.7% | 46.1% |
| | | -5.8 | -0.1 | -1.9 | 8.9 | -7.5 | |
| Total (100%) | | (197) | (296) | (171) | (487) | (49) | (1,200) |

Source: Brazil CAP survey, 2007

Notes: Pearson Chi-Square 132.77, d.f.: 4, Asymp. Sig. (2-sided): 0.000

Table 9. Proportion of respondents who published work abroad, by type of institution

| | | Institutional context | | | | | Total |
|-------------------------------------|------|------------------------------|------------------------------|----------------------------|---------------------------|---------------------|---------|
| | | Research Public Universities | Regional Public Institutions | Elite Private Institutions | Mass Private Institutions | Research Institutes | |
| Proportion of work published abroad | some | 61.4% | 27.7% | 36.3% | 12.1% | 83.7% | 30.4% |
| | none | 10.3 | -1.2 | 1.8 | -11.4 | 8.3 | |
| | | 38.6% | 72.3% | 63.7% | 87.9% | 16.3% | 69.6% |
| | | -10.3 | 1.2 | -1.8 | 11.4 | -8.3 | |
| Total (100%) | | (197) | (296) | (171) | (487) | (49) | (1,200) |

Source: Brazil CAP survey, 2007.

Notes: Pearson Chi-Square: 236.0 df. 4, Asymp. Sig. (2-sided): 0.000

Another relevant change in this dimension is related to the proportion of Brazilian scholars publishing their works abroad. In 1992, only 17% of Brazilian academics reported having published abroad in the three years prior to the survey. In 2007, this figure increased to 30%, as shown in Table 9.

These figures are consistent with the international data from the Science Citation Index, which registers sharp increases in the participation of Brazilian researchers in internationally indexed publications since the late 1990s. So, even with the Brazilian academic market being largely closed to international academic migration, and with Brazilian graduate education lagging behind in internationalization, the intensity of international exposure of the Brazilian academic community has increased remarkably in the last decade. Still, these data give no clues about the quality and impact of this increased participation or of the international networking of Brazilian academic community.

Conclusions

The last 15 years has witnessed important changes in the Brazilian academic market. Some relevant traits highlighted in this analysis are as follows.

- Regarding the relationship between graduate education and academic recruitment, it can be said that it has matured, in the sense that now graduate studies are, for many academics, perceived as a pre-requisite for being accepted as academic staff.
- Nevertheless, there is a remarkable incongruence between the stronger exigencies and the working conditions faced by academics. A relevant proportion of PhD holders reported poor conditions of employment and suffer restricted access to support for research.
- In spite of stronger links with the international academic community, the academic market is still closed and internally-oriented. It recruits mostly Brazilian academics and is mainly oriented toward Brazilian students.

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